



ALTERNATIVE G– COTTAGE AVENUE EXTENSION

Alternative G has been derived from discussions and meetings with representatives from the QEN. Figure 8.G.1 shows the existing conditions of Quincy Center with the overlay of the alignment of Alternative G. Figure 8.G.2 shows a conceptual plan of the potential future redevelopment of Quincy Center with the overlay of the alignment of Alternative G. The existing culverted location of Town Brook and the preferred alignment are shown for reference.

Identified Constraints & Metrics Analysis

The constraints and conflicts associated with this alternative were reviewed for its implementation under existing conditions and conflicts with the implementation of the City of Quincy's URDP mixed use redevelopment building program and sustainable design objectives. Figure 8.G.1 identifies the constraints under the existing conditions at Locations 1 through 6. Figure 8.G.2 shows Locations 7, 8, and 9 for identified constraints under the proposed future development.

Flood Control

Constructing a new reinforced concrete culvert sized to convey the appropriate design storm event will result in an improvement over the existing conditions, which consists of culvert segments with limiting hydraulic segments through the project area.

Under the existing site conditions construction through Location 4 requires the culvert be installed between two existing buildings approximately 9.5 feet apart, which would require the following:

- The reduction in width of the proposed culvert section to a maximum interior width of six feet. Reducing the width of the channel section will result in the creation of a limiting hydraulic section creating an adverse tailwater condition, resulting in a negative impact on flood control and hydraulic conveyance.
- The adverse tailwater impacts would cause surcharging in Town Brook, impacting the surface drainage collection system within the Quincy Center area upstream of the contraction.

In addition to the issues at Location 4, a series of tight radii will result in adverse hydraulic conditions at Location 5, leading to head losses that would reduce capacity of the culvert section and tailwater impacts that would negatively affect upstream storm drainage collection systems within the Quincy Center area.

This alternative does not comply with the objective of this metric based on the current design and constraints

Cost

Construction premiums associated with this alternative include:

- Acquisition of property or obtaining easement rights
- Demolition or partial demolition of existing structures along proposed alignment
- Significant utility relocations associated with construction along Hancock Street



- Foundation support due to construction in close proximity to existing buildings

As this alternative was identified as the preferred alternative of the QEN and specifically referenced in the MassDEP comment letter on the ENF and in the ENF Certificate, a detailed cost analysis was performed for this alternative, with the total cost summarized below.

Property Acquisition Cost	= \$7,700,000
Construction Costs	= \$17,600,000
Total Cost	= \$25,300,000

The detailed cost estimate for Alternative G is greater than twice the cost of the City's preferred alternative. Given that it has been determined that Alternative G provides no additional environmental benefit or enhancements, when compared to Alternative C, the additional cost is only one of the factors which makes Alternative G a non-viable option for the City.

Underground Conflicts

This Alternative runs between the existing structures on parcels DU65 and DU66 that are approximately 9.5' apart and will therefore conflict with the existing structures on these parcels. The alignment also runs beneath the Ross parking garage for a length of approximately 400 linear feet, in order to construct this alignment the garage must be razed. The alignment will require the relocation of significant existing utility infrastructure within Hancock Street to accommodate its construction. This proposed alignment runs across Hancock Street for approximately 100 linear feet, which results in substantial impacts to the existing utility infrastructure and the known utility infrastructure improvements the City is planning to support the Quincy Center redevelopment. Refer to Figure 8.5.4 for a depiction of the utility infrastructure in this area.

Under the existing site conditions at Location 3, the proposed alignment will cross Hancock Street, which contains a number of underground utilities in close proximity to one another including:

- National Grid electric duct bank (4-5" conduits);
- Sanitary sewer trunk lines and service connections (18" trunk line);
- Storm drainage trunk lines and catch basin connections (18" trunk line);
- Water main and service connections (12" main);
- Verizon tel/data duct bank (8-4" conduits);
- National Grid gas main with service connections (8" main).

Under the proposed site conditions consistent with the Urban Revitalization and Development Plan (URDP), at Location 9, there are conflicts with proposed gravity utility infrastructure within "primary utility corridor". The proposed primary utility corridor will provide key utility trunk line connections for the Quincy Center Redevelopment Project to the surrounding utility infrastructure grid. This corridor is critical in providing service for all public and private utilities for the redevelopment project. Refer to Figure 2.5.5.

Property Constraints (Property Control)

The City of Quincy does not control the underlying property along this culvert alignment, therefore in order to construct this alternative the City would have to acquire property or obtain easements to construct and maintain the Town Brook Culvert under this alternative.



Under the existing site conditions at Location 1, the alignment requires construction activities on parcel DU142 which is not controlled by the City of Quincy. At Location 4, the alignment requires construction activities on parcels DU65, DU66, and DU67, none of which are controlled by the City of Quincy.

Based on this information this Alternative does not meet the criteria for this metric.

Enhance Smelt Fisheries Habitat

Construction of this alternative provides limited opportunity for the creation of open channel sections with public open space. A low flow channel with spawning substrate, spawning riffles with designed attraction velocities and in-line resting pools can be constructed extending upstream into the proposed enclosed culvert to extend and spawning habitat, if deemed appropriate by the DMF, however without additional open channel/ day-lit sections the potential for extending Fisheries Enhancements north of the Concourse may be limited.

Construction Schedule & Phasing

This alternative would require extensive phasing and coordination associated with the demolition or partial demolition of multiple buildings along the proposed alignment and the construction across Hancock Street.

Under the existing site conditions at Location 1, the foundation support required for construction adjacent to the existing building on parcel DU142 will result in cost premiums. At Location 2, approximately 400 linear feet of the alignment is proposed within the existing Ross Garage footprint which would require razing the garage. Construction would require temporary construction easements in order to access the work area at Location 4.

Under the proposed site conditions consistent with the Urban Revitalization and Development Plan (URDP), an underground culvert at Location 8 will require coordination with the construction of the future building foundation system.

Environmental Enhancements

Construction of this alternative will result in limited potential for additional open channel sections, limited potential for habitat enhancements and limited potential for enhancement of Riverfront Area. Existing and proposed grades along the alignment alternative result in an invert to grade difference of greater than 10 feet and there is limited opportunity for adjacent public open space given the property control issues and existing and proposed uses within Quincy Center. See the Project Plans for plan and profile information for Alternative G.

Code Compliance

This alternative proposes to convey the flood waters of Town Brook beneath and adjacent to habitable structures. Issues associated with conveying flood waters through a building are not consistent with current building or plumbing codes.

This alternative does not comply with the objective of this metric.



Consistency with URDP

This alignment provides limited potential for the creation of open channel sections with public open space and therefore does not address these objectives of the URDP as it pertains to the creation of public open space. The alignment runs through some of the larger parcels within the downtown area, which the City of Quincy has identified in the Urban Revitalization and Development Plan as appropriate for high density mixed use redevelopment. As a result, the ability to incorporate open channel sections with public open space is limited as the Brook will remain in an enclosed culverted through these areas.

Under the proposed site conditions consistent with the Urban Revitalization and Development Plan (URDP), the inability to construct a building at Location 8 is inconsistent with the City of Quincy's goals outlined in the URDP, which are to achieve a desired mixed use density for the Hancock lot parcel.

Open Channel/Public Amenity

This alternative provides little practical opportunity for the creation of open channel segments with adjacent public open space as the constraints under existing conditions and lack of integration with the planned public open space and pocket parks associated with the URDP limit this opportunity.

Under the existing site conditions at Location 6, the construction of the culvert through an active parking lot results in limited opportunity for open channel sections and public amenity space.

Under the proposed site conditions consistent with the Urban Revitalization and Development Plan (URDP), construction of an open channel section through the proposed Clivedon Street public common area would result in the following impacts at Location 7: (Refer to Figure 2.S.3)

- Creation of an open channel section of eleven feet wide with an invert elevation 18 feet below proposed grade and a water surface elevation of Town Brook approximately 17.5 feet below proposed grade. The significant depth to height ratio results in a public amenity of questionable value.
- Open channel section at the proposed public common area would present a significant barrier to pedestrian foot traffic across the common and would negatively impact the ability to create a cohesive public space with market stalls, seasonal ice skating rinks, cafés and public seating areas consistent with the open space objectives outlined in the URDP.

In addition, there is limited opportunity for open channel section with public open space without significant impact to URDP building program density and vehicular circulation at Location 9. South of Location 9 is the potential creation of approximately 100 linear feet of open channel section with significant grade alteration on Hancock Lot. The potential open space in Hancock Lot area under proposed conditions is located in the middle of an access/driveway and will be required for emergency access and is not consistent with URDP program

Conclusion

Examining this alternative under existing conditions only, several issues are apparent and include the following as noted above:



- The alignment requires construction activities on several parcels controlled by the City of Quincy.
- The foundation support required for construction adjacent to the existing building on parcel DU142 will be cost prohibitive.
- In order for the alignment to be constructed the Ross garage must be razed.
- The proposed alignment will cross Hancock Street, which contains a number of underground utilities in close proximity to one another.
- Head losses that would reduce capacity of the culvert section and tailwater impacts that would negatively affect upstream storm drainage collection systems within the Quincy Center area.
- Reinforcement and support of the two existing building foundation systems adjacent to the alignment
- The construction of the culvert through an active parking lot results in limited opportunity for open channel sections and public amenity space.
- Construction would require temporary construction easements in order to access the work area.

The identified constraints under the exiting conditions make this alternative less than acceptable and further evaluation for consistency with the future potential development of Quincy Center under the URDP raises additional concerns as follows.

- Invert elevation 18 feet below proposed grade for open channel sections.
- Fall hazard issues results in a public amenity of questionable value.
- Open channel section at the proposed public common area would present a significant barrier to pedestrian foot traffic
- The proposed alignment will cross Hancock Street, which contains a number of underground utilities in close proximity to one another.
- Head losses that would reduce capacity of the culvert section and tailwater impacts that would negatively affect upstream storm drainage collection systems within the Quincy Center area.
- Inconsistent with the City of Quincy's goals outlined in the URDP, which are to achieve a desired mixed use density for the Hancock lot parcel.
- Conflicts with proposed gravity utility infrastructure within "primary utility corridor".
- Limited opportunity for open channel section with public open space without significant impact to the future URDP building program density and vehicular circulation.

Overall, this alternative is not a viable option for the Town Brook enhancements. Although the QEN argues that the engineering is possible and the issues can be resolved, the costs to construct the Alternative G alignment are significantly higher than the preferred Alternative C.

This alternative presents limited environmental benefits and results in a limiting hydraulic section of culvert with the Quincy Center area. The feasibility of implementing this alternative is limited by lack of property control and construction scheduling issues associated with property acquisition and demolition of buildings as well as the significant utility relocations associated with the proposed work on Hancock Street. Therefore, this alternative was eliminated as a viable option by the City.



A detailed metrics comparison of the City's Preferred Alternative C with QEN's Alternative G has been outlined in Table 8.3.

Table 8.3 Metrics Comparison (Alternative C vs. G)		
Evaluation Metric	Alternative C	Alternative G
Flood Control	Conveys the appropriate design storm and complies with the objective of this metric.	Has limiting hydraulic sections, therefore does not comply with the objective of this metric
Cost		
Property Acquisition	\$700,000	\$7,700,000
Construction Costs	\$11,500,000	\$17,600,000
Total Cost	\$12,200,000	\$25,300,000
Underground Conflicts	Minimal Conflicts with utility infrastructure that can be accommodated	Conflicts in Hancock Street with existing and proposed utility infrastructure are significant; Conflicts with existing building foundation systems
Property Constraint	Work can be completed on City controlled parcels, therefore complies with the objective of this metric	Work cannot be completed on City controlled parcels, additional land acquisition would be required, therefore does not comply with the objective of this metric
Enhance Fisheries Habitat	Approximately 165 feet of new fish run is proposed at a ratio of 3:1 for created to improved habitat	Fisheries Habitat could be created on this area, but depth to the bottom of the channel will be greater
Construction Scheduling and Phasing	Predictable schedule and phasing, due to property and construction route	Issues with property acquisition, foundations of buildings adjacent to the alignment and razing of the Ross Garage result in a schedule which is unpredictable and cannot be determined until land is controlled



**Table 8.3
Metrics Comparison (Alternative C vs. G)**

Evaluation Metric	Alternative C	Alternative G
Environmental Enhancements	Significant enhancements to smelt habitat, open space, Riverfront Area and other resources is proposed including removal of illicit discharges	Environmental enhancements can be achieved under this proposal, although open space area is limited
Code Compliance	This alternative does comply with the objective of this metric.	This alternative proposes to convey the flood waters of Town Brook beneath and adjacent to habitable structures, which is not consistent with current code requirements This alternative does not comply with the objective of this metric.
Consistency with URDP	Consistent with URDP	Open space would require alterations to URDP program and not be consistent with land use planning for Quincy Center
Open Channel/Public Amenity	186 Linear Feet	Potential creation of approximately 100 Linear Feet of open channel section with significant grade alteration on Hancock Lot